



OPTIMAL SYSTEMS ENGINEERING SDN BHD  
ENGINEERING SUSTAINABILITY



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# Establishing Energy Baselines

## Using Regression Analysis

**8 CDP Hours**

*(Mandatory CDP For REM 1)*



+6016-7167248



Website:  
[optimalsystems.my](http://optimalsystems.my)

# Training Overview

A credible energy baseline is the foundation of any effective Energy Management System (EnMS). Without a well-defined baseline, organizations risk making misleading claims about energy savings and struggle to make informed energy management decisions.

This training provides participants with a practical and structured approach to establishing energy baselines using regression analysis, in line with EnMS requirements. Participants will learn how to conduct an energy review, identify Significant Energy Uses (SEUs), define suitable Energy Performance Indicators (EnPIs), and develop statistically sound baselines that reflect actual operating conditions.

This course focuses on baseline development only and serves as a prerequisite for advanced training on energy performance evaluation and CUSUM analysis.

## Who Should Attend

This training is suitable for:

- Energy managers and energy management team members
- Energy management system implementation teams
- Facility and plant engineers
- Sustainability and ESG professionals
- Energy auditors and consultants
- Technical managers responsible for energy data and reporting



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# Learning Outcomes

By the end of this training, participants will be able to:

1. Explain the role of energy baselines within an Energy Management System.
2. Conduct an energy review to identify Significant Energy Uses (SEUs) and relevant variables.
3. Define appropriate Energy Performance Indicators (EnPIs) suitable for baseline development.
4. Apply regression analysis to model the relationship between energy consumption and key influencing variables.
5. Establish a statistically sound energy baseline suitable for ISO 50001 (or other system) documentation and future performance tracking.

# Training Approach

- Realistic industrial examples and case-based discussions
- Step-by-step explanation of regression-based baseline development
- Practical insights from ISO 50001 implementation experience

*Note: Performance evaluation, target tracking, and CUSUM analysis are not covered in this training and will be addressed in a separate advanced module.*

# Key Takeaways

- Participants will leave the training with:
- A clear understanding of what constitutes a credible energy baseline
- The ability to link energy consumption to operational variables using regression analysis
- Practical knowledge to support EnMS audits and documentation
- A solid foundation for advanced energy performance evaluation training



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# Training Outlines

Times	Topics
0900 - 0930	Overview and the Framework of Energy Management Performance Monitoring
0930 - 1000	Conduct Energy Review
1000 - 1030	Identify the Significant Energy Uses (SEUs) and Relevant Variables
1030 - 1045	Tea Break
1045 - 1200	Define Energy Performance Indicators (EnPIs)
1200 - 1300	Lunch
1400 - 1530	Perform Regression Analysis for Energy Data
1530 - 1545	Tea Break
1545 - 1645	Establish the Energy Baselines
1645 - 1700	Way Forward



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## OPTIMISE Energy Audit, GHG Accounting and EnMS Track Records

- Led UTM to be globally ranked 1st on SDG 7 - Affordable and Clean Energy
- Co-developer of ASEAN EMGS Energy Management System Standards with MGTC.
- Led UTM to win the ASEAN Energy Award and EMGS 3 Star EMGS Gold Standard.
- Involved in certification of energy managers and energy end users for 15 years.
- Developer of award-winning energy audit and energy monitoring software.
- Led UTM to achieve over RM 30 million energy savings between 2011-2023.
- Over 20 years experience in energy audit and optimisation consultancy, R&D and professional training for over 700 national/multinational companies.
- Certified trainer, auditors & centre for training & certification of energy managers.

## Selected References

- Shell, Middle Distillate Synthesis
- BP - Amoco
- MLNG
- Felda Proctor and Gamble
- MIMOS Semiconductor
- Riau Pulp and Paper Mill
- Qatar LNG
- Pertamina Engineering Group
- PT Titan Petrokimia Interindo
- Pan Century, IOI Oleochemicals
- BASF - Petronas
- MTBE - Petronas
- Huntsman Tioxide
- Ansell Malaysia
- Hershey Malaysia
- Malaysia Newsprint Industries
- Malaysia Palm Oil Board
- Malaysia Energy Commission
- Technip (M) Sdn Bhd
- PT Chandra Asri
- Petronas Penapisan (M) Sdn Bhd
- Petronas Gas Sdn Bhd
- Kaneka Malaysia
- UKM, UPM, USM, UM, UNIKL

**20+**

Years Experience in  
Energy Audit and  
Optimisation

**#1**

Global Rank in R&D on  
'Heat Exchanger.  
Retrofitting and Design'  
Elsevier Scival 2014

**700+**

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